Expanding Your Community-Based Research to Communities Across the US

via

EPA's Community-Focused Exposure and Risk Screening Tool (C-FERST)

March 2012

Challenge:

Communities need information, but...

- there are so many potential issues, impacts, & solutions
- not enough experts to evaluate every local situation
- some communities have limited resources
  - limited access to info. as well as disproportionate impacts

C-FERST is intended to...

- fill information gaps
- improve communities' access to exposure and risk science

What is C-FERST?

Community-**F**ocused **E**xposure and **R**isk **S**creening **T**ool:

C-FERST is EPA/ORD/NERL's GIS and information access Web tool for supporting cumulative risk screening assessments, to support decision-making for sustainable and healthy communities.

For more information visit:
http://www.epa.gov/heasd/c-ferst

Potential:

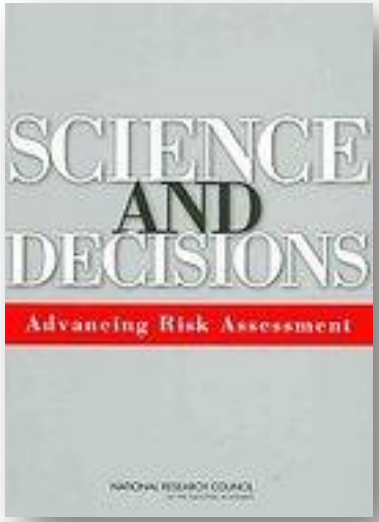
Expand your community environmental research so that more results are broadly applicable and available

- **C-FERST uses recent advances in environmental sciences, Global Information Systems (GIS), etc. for disseminating science to support community-level decision-making**
- **Consider how your community-level research could be extended to other communities**
  - *potential to look for application of community studies outside the single location*
- **Consider how C-FERST could communicate your results**

Needs & External Drivers

- **Science & Decisions: Advancing Risk Assessment (2009)**

  "EPA should focus on development of guidelines and methods for simplified analytic tools that could allow screening-level cumulative risk assessment and could provide tools for communities and other stakeholders to use in conducting assessments." *(pp. 10, 236)*



- **NAPA, NEJAC, NRC Reports**
- **EPA Administrator Priorities**
- **EPA/ORD Sustainable and Healthy Communities Research Program**

Summary of exposure science steps in CARE, C-FERST and other community efforts

1. Community reviews materials on estimated exposures & risks in their community

2. Community decides if measurements needed to improve estimates

3. Community looks for likely problem sources

4. With above information and information on risk management options, including sustainable solutions, community takes action

Step 1: Risk Ranking & Human Exposure Modeling at Community Scales

- **Start with screening-level models**
  - *e.g.,* National Air Toxics Assessment (NATA)
- **Combined with dose-response models to place results in risk context**
  - estimated health effects are a community interest
- **Possibly environmental public health tracking in community**
  - *e.g.,* asthma rates, premature mortality, blood-lead surveillance

Step 2: Low-cost measurements or detailed modeling, if needed

- **Once issues narrowed, more detailed information might be needed to inform a decision**
- **Possibly more detailed modeling**
  - *dispersion modeling, human exposure modeling*
- **Possibly community-level measurements**
  - *especially if low cost, robust*

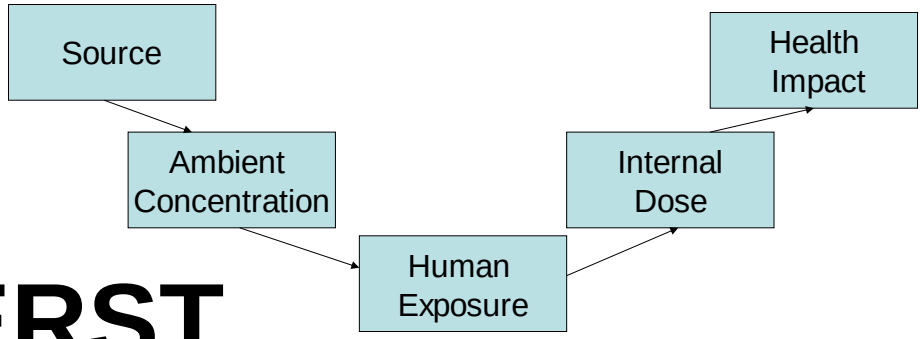
Step 3: Source Apportionment, if needed

- Once issues identified, what is source?
- Back out source contributions from prior models
- Possibly source apportionment models
- Possibly measurements

Step 4: Risk Management Options

- Effectiveness of options
- Costs of alternatives
- Often important to characterize costs of current conditions (expand step 1)
- Sustainability considerations
- Holistic solutions, considering all factors

Structure of Estimates & Indicators in C-FERST



- **Ambient concentrations**
- **Human exposure estimates**
- **Biomarker estimates**
- **Risks/Health impacts**
  - cancer, asthma, early neurotoxicity effects, etc.

Current Status of C-FERST

- **C-FERST Beta Test Version 1.1 online**
- **Recently Published**
  - "The EPA's Community-Focused Exposure and Risk Screening Tool (C-FERST) and Its Potential Use for Environmental Justice Efforts," Zartarian et al., *American Journal of Public Health*, 2011
- **Examples (from previous steps)**
  - National Air Toxics Assessment (NATA)
  - Community-level measurements collection and methods development
  - Cumulative risk estimates at community-scale
  - Collaborations within EPA and with external partners

"C-FERST is an extremely powerful tool, and there are things we can do to make it more so."
–Springfield, MA CARE Grantee Project Officer

"I think C-FERST is a very ambitious, comprehensive and powerful tool and has great potential."
–Portland, ME CARE Grantee

"C-FERST can help communities stay on track and identify gaps."
–Senior Project Officer, Region 1

C-FERST is Becoming a Reality

- **Applying to community case studies**
- **Fielding & incorporating feedback**
- **Gaps being filled, most remain**
- ***Opportunities for your research!***

Science Needs to Support Community-Level Efforts

- Great need for estimates of exposure, risk, benefits of actions at community level
- Scientific community could make results more extendable to local-scale efforts across US
- C-FERST provides a structure and platform to communicate science to support community-level decision-making

Acknowledgements

- **C-FERST Development Team**
  - Collaborators in ORD
  - Collaborators in CARE Program (EPA project officers, community grantees), Regions, Program Offices
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